

REMARKS/ARGUMENTS

Claims 1-11 are pending in this application.

Applicants appreciate the Examiner's indication that Claims 4 and 5 would be allowable if rewritten in independent form including all of the features of the base claim and any intervening claims.

Claims 1-3 and 6-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kundu (U.S. 6,825,740) in view of Fieduszeko et al. (U.S. 5,484,764). Claims 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kundu in view of Fieduszeko et al., and further in view of Kundu et al. (6,326,865). Applicants respectfully traverse the rejections of claim 1-3 and 6-11.

Claim 1 recites:

A dual-mode bandpass filter comprising:
a dielectric substrate;
a resonator electrode disposed at a certain height in said dielectric substrate; and
a ground electrode disposed at a different height in said dielectric substrate from said resonator electrode so as to oppose said resonator electrode; wherein
said ground electrode includes at least one opening, whereby a resonant electric field of said resonator electrode is controlled to couple two resonant modes generated in said resonator electrode. (emphasis added)

With the unique combination and arrangement of features recited in Applicants' Claim 1, Applicants have been able to provide a dual-mode bandpass filter having high flexibility in design and achieving a desired bandwidth with ease (see, for example, the second full paragraph on page 2 of the originally filed specification).

The Examiner alleged that Kundu ('740) teaches all of the features recited in Applicants' Claim 1, except for the resonator and the ground electrode being disposed at certain heights within the dielectric substrate. The Examiner further alleged that Fieduszeko teaches a bandpass filter configured with two or more dual-mode resonators that are positioned by layers within a dielectric substrate. Thus, the Examiner

concluded that it would have been obvious “to modify the electrode layers of Kundu in the configuration of Fieduszko [et al.] such that the layered electrodes/dielectric operations within a high dielectric constant (col. 1, lines 46-58) so as to reduce the electric wavelength of the [resonant] frequency thereby reducing the overall physical configuration of the filter for the selected resonant frequency.” Applicants respectfully disagree.

Contrary to the Examiner’s allegations, Kundu (‘740) teaches a dual mode bandpass filter in which two resonance modes are coupled by removing a portion of a resonator electrode 13, not by providing an opening having a selected shape in a ground electrode. More particularly, as seen in Fig. 2 of Kundu (‘740), a corner portion of the resonator electrode 13 is removed so as to couple the two resonance modes. The fact that electrode 13 is a resonator electrode is clearly evident since the exciting electrodes 14 and 15 are disposed adjacent to the resonator electrode 13 so as to excite vibration therein (see, for example, Fig. 2 and col. 4, lines 53-59 of Kundu (‘740)). Thus, electrode 13 certainly cannot be fairly construed as a ground electrode. Therefore, Kundu (‘740) clearly fails to teach or suggest the feature of “said ground electrode includes at least one opening, whereby a resonant electric field of said resonator electrode is controlled to couple two resonant modes generated in said resonator electrode” as recited in Applicants’ Claim 1.

The Examiner alleged that Fieduszko et al. teaches a resonator electrode and a ground electrode which are disposed within a dielectric substrate. However, the only ground electrodes disclosed in Fieduszko et al. are ground planes 54 and 56, which are clearly disposed on outer surfaces of the dielectric substrate, not in the dielectric substrate (see, for example, elements 54 and 56 in Fig. 2 of Fieduszko et al.). Thus, contrary to the Examiner’s allegations, Fieduszko et al. certainly fails to teach or suggest the feature of “a ground electrode disposed at a different height in said dielectric substrate from said resonator electrode so as to oppose said resonator electrode” as recited in Applicants’ Claim 1.

In addition, the ground planes 54 and 56 of Fiediuszko et al. do not include any openings therein. Thus, neither Kundu ('740) nor Fiediuszko et al. teaches or suggests the feature of "said ground electrode includes at least one opening, whereby a resonant electric field of said resonator electrode is controlled to couple two resonant modes generated in said resonator electrode" as recited in Applicants' Claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of Claim 1 under 35 U.S.C. § 103(a) as being anticipated by Kundu ('740) in view of Fiediuszko et al.

The Examiner relied upon Kundu et al. ('865) to allegedly cure deficiencies of Kundu ('740) and Fiediuszko et al. However, Kundu et al. ('865) clearly fails to teach or suggest the features of "a resonator electrode disposed at a certain height in said dielectric substrate," "a ground electrode disposed at a different height in said dielectric substrate from said resonator electrode so as to oppose said resonator electrode," and "said ground electrode includes at least one opening, whereby a resonant electric field of said resonator electrode is controlled to couple two resonant modes generated in said resonator electrode" as recited in Applicants' Claim 1. Thus, Applicants respectfully submit that Kundu et al. ('865) fails to cure the deficiencies of Kundu ('740) and Fiediuszko et al. described above.

Accordingly, Applicants respectfully submit that Kundu ('740), Fiediuszko et al., and Kundu et al. ('865), applied alone or in combination, fail to teach or suggest the unique combination and arrangement of elements recited in Applicants' Claim 1.

In view of the foregoing remarks, Applicants respectfully submit that Claim 1 is allowable. Claims 2-11 depend upon Claim 1, and are therefore allowable for at least the reasons that Claim 1 is allowable.

In view of the foregoing remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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